

WHAT IS CLAIMED IS:

1 1. A hydraulic passage structure of an automatic
2 transmission having at least one friction element for gearshift,
3 the friction element comprising a drum, the hydraulic passage
4 structure comprising:
5 a housing;
6 a sleeve which is fitted into an inner circumference
7 portion of the housing;
8 a center member joined integrally with the drum of the
9 friction element, the center member being inserted in an inner
10 circumference of the sleeve;
11 a radial passage formed in the housing;
12 a sleeve passage formed in the sleeve, the sleeve passage
13 connecting with the radial passage of the housing; and
14 a center member passage formed within the center
15 member, the center member passage connecting the friction
16 element and the sleeve passage, line pressure being supplied
17 to the friction element via and in order of the radial passage,
18 the sleeve passage, and the center member passage.

1 2. The hydraulic passage structure as claimed in claim 1,
2 wherein the housing comprises a midway wall which is formed
3 integrally therewith, the radial passage of the housing being
4 formed in the midway wall.

1 3. The hydraulic passage structure as claimed in claim 1,
2 wherein the sleeve is made from a harder material than the
3 housing and inserted from an axial direction into the inner
4 circumference portion of the housing.

1 4. The hydraulic passage structure as claimed in claim 1,
2 wherein the sleeve is made from a ferro-alloy.

1 5. The hydraulic passage structure as claimed in claim 4,
2 wherein the sleeve is inserted from an axial direction into the
3 inner circumference portion of the housing, and fixed to the
4 housing.

1 6. The hydraulic passage structure as claimed in claim 5,
2 wherein the sleeve is fixed at an insertion lead end thereof to
3 the housing by a plurality of nuts.

1 7. The hydraulic passage structure as claimed in claim 1,
2 wherein the sleeve passage comprises an outer circumference
3 passage which connects with the radial passage of the housing.

1 8. The hydraulic passage structure as claimed in claim 7,
2 wherein the sleeve passage further comprises a plurality of
3 holes which connects the outer circumference passage with the
4 center member passage.

1 9. The hydraulic passage structure as claimed in claim 1,
2 wherein the sleeve passage comprises an outer circumference
3 passage which connects with the radial passage of the housing,
4 and a plurality of holes formed in the outer circumference
5 passage, the plurality of holes connecting with the center
6 member passage.

1 10. The hydraulic passage structure as claimed in claim 1,
2 wherein the sleeve passage comprises a plurality of axial
3 grooves which connects with the radial passage of the housing,
4 each axial groove having an opening formed therein which
5 connects to the center member passage.

1 11. The hydraulic passage structure as claimed in claim 1,
2 wherein the sleeve passage comprises a plurality of axial
3 grooves formed in an outer circumference of the sleeve to
4 connect with the radial passage of the housing, and a plurality
5 of radial openings formed in bottom surfaces of the plurality of
6 axial grooves to connect with the center member passage.

1 12. The hydraulic passage structure as claimed in claim 1,
2 wherein the center member passage comprises an external
3 passage which connects with the sleeve passage, and an
4 internal passage which connects the external passage and the
5 friction element.

1 13. The hydraulic passage structure as claimed in claim 1,
2 wherein the center member passage comprises a plurality of
3 circumference grooves formed in an outer circumference
4 thereof which connect with the sleeve passage, and a plurality
5 of axial holes which connects the plurality of circumference
6 grooves and the friction element.

1 14. The hydraulic passage structure as claimed in claim 1,
2 wherein the center member passage comprises a plurality of
3 grooves formed in an outer circumference of the center

4 member which connects to the sleeve passage, and a plurality
5 of holes formed inside the center member which connects the
6 plurality of grooves and the friction element.

1 15. A hydraulic passage structure of an automatic
2 transmission having a case and at least one friction element,
3 the hydraulic passage structure comprising:
4 a perpendicular portion which is formed inside the case
5 integrally therewith;
6 a sleeve which is fitted into an inner circumference
7 portion of the perpendicular portion;
8 a center shaft member connected to a drum of the friction
9 element; and
10 an oil passage network formed in the perpendicular
11 portion, the sleeve, and the center shaft member, oil pressure
12 being supplied to the friction element through the oil passage
13 network starting in the perpendicular portion, then through the
14 sleeve, and finally through the center shaft member.